

668020-5/54E60

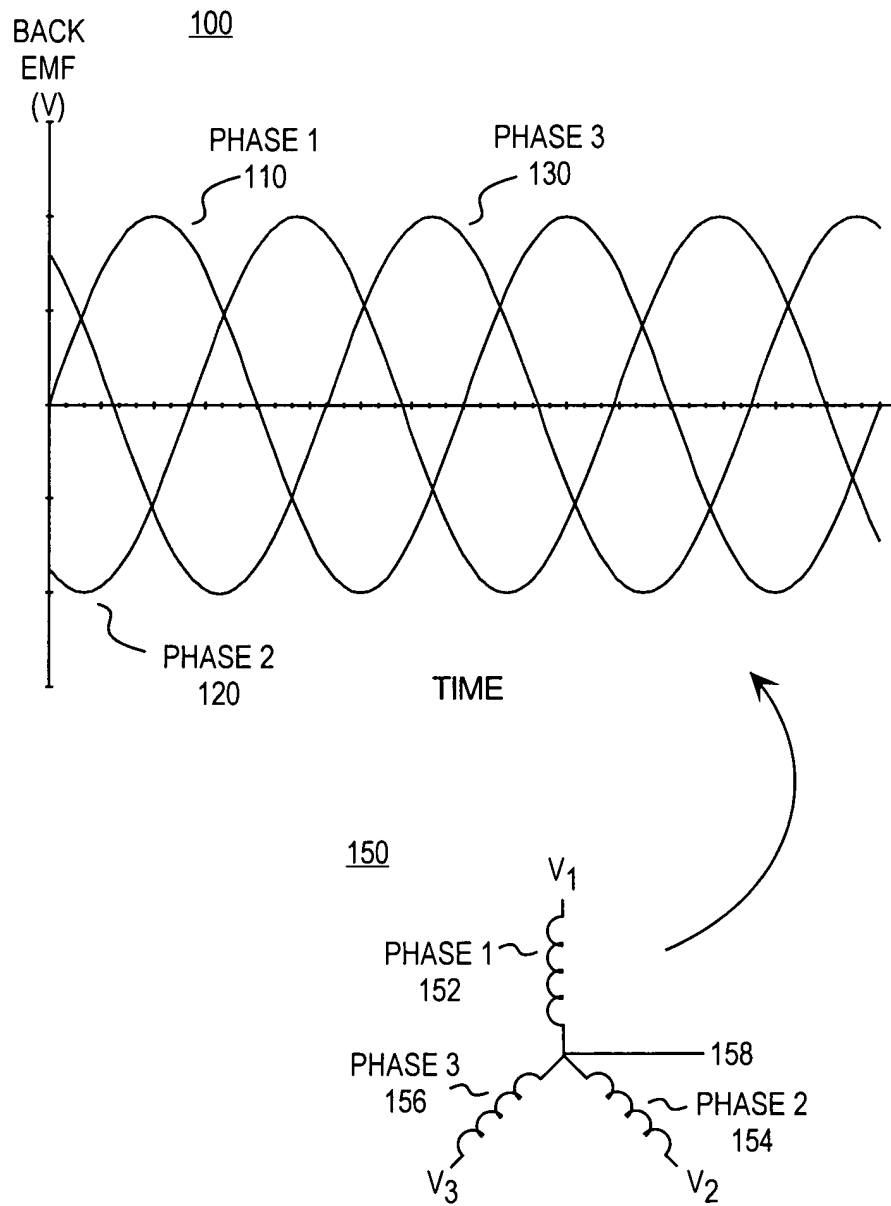


FIG. 1

6680/0"5/54E60

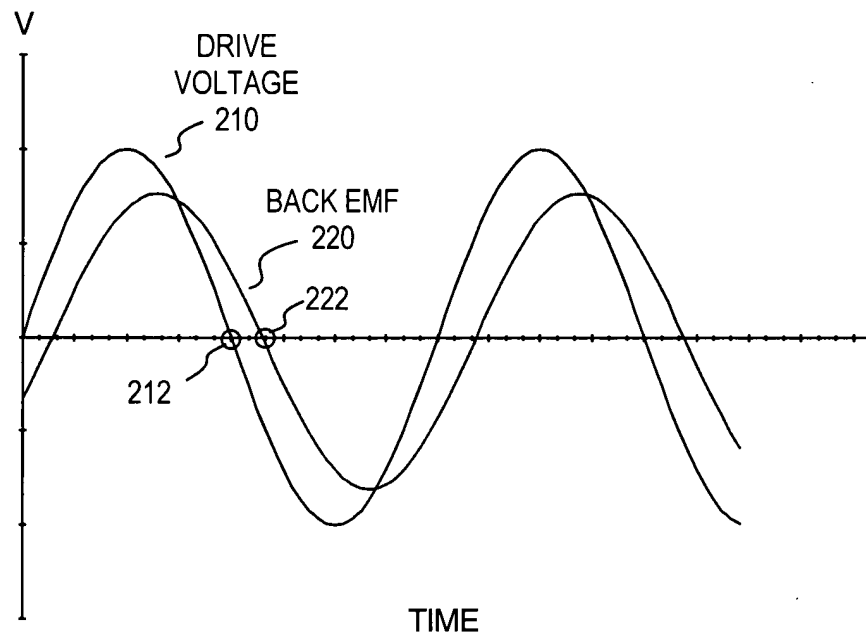


FIG. 2

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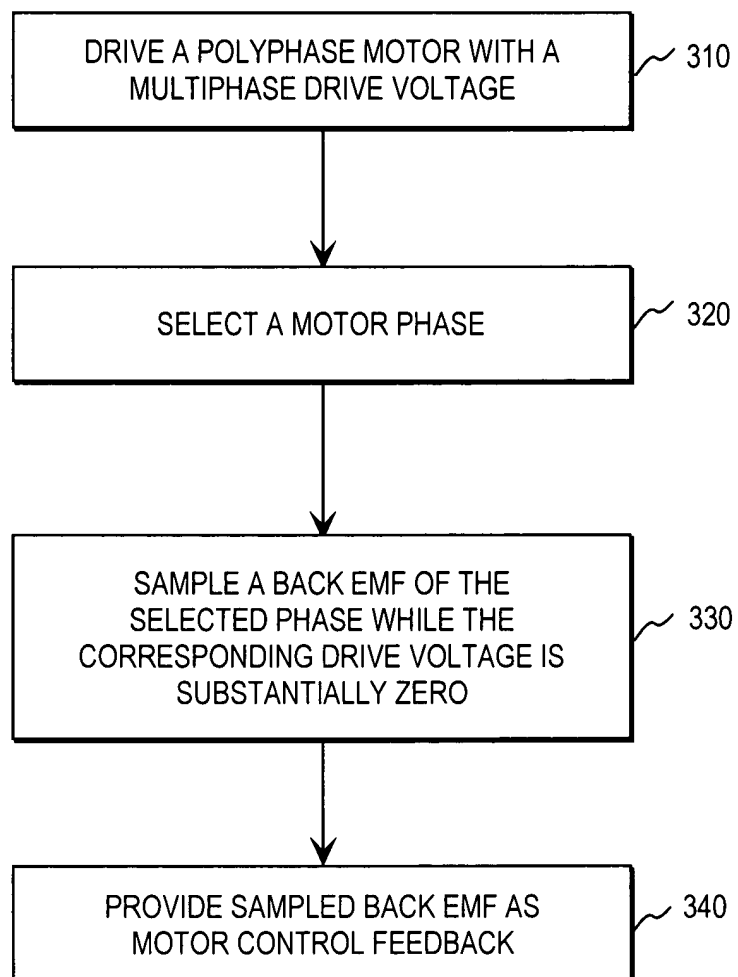


FIG. 3

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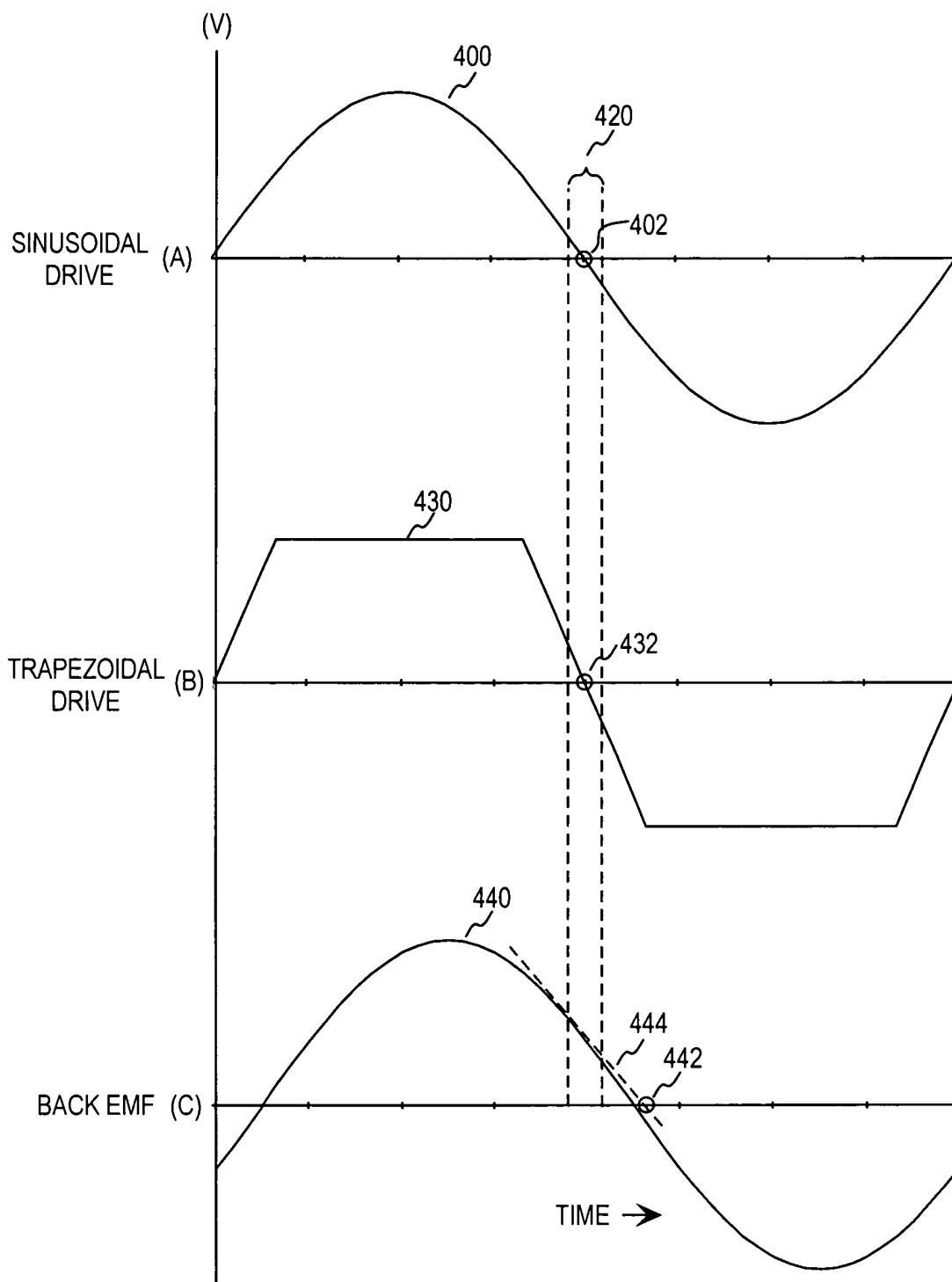


FIG. 4

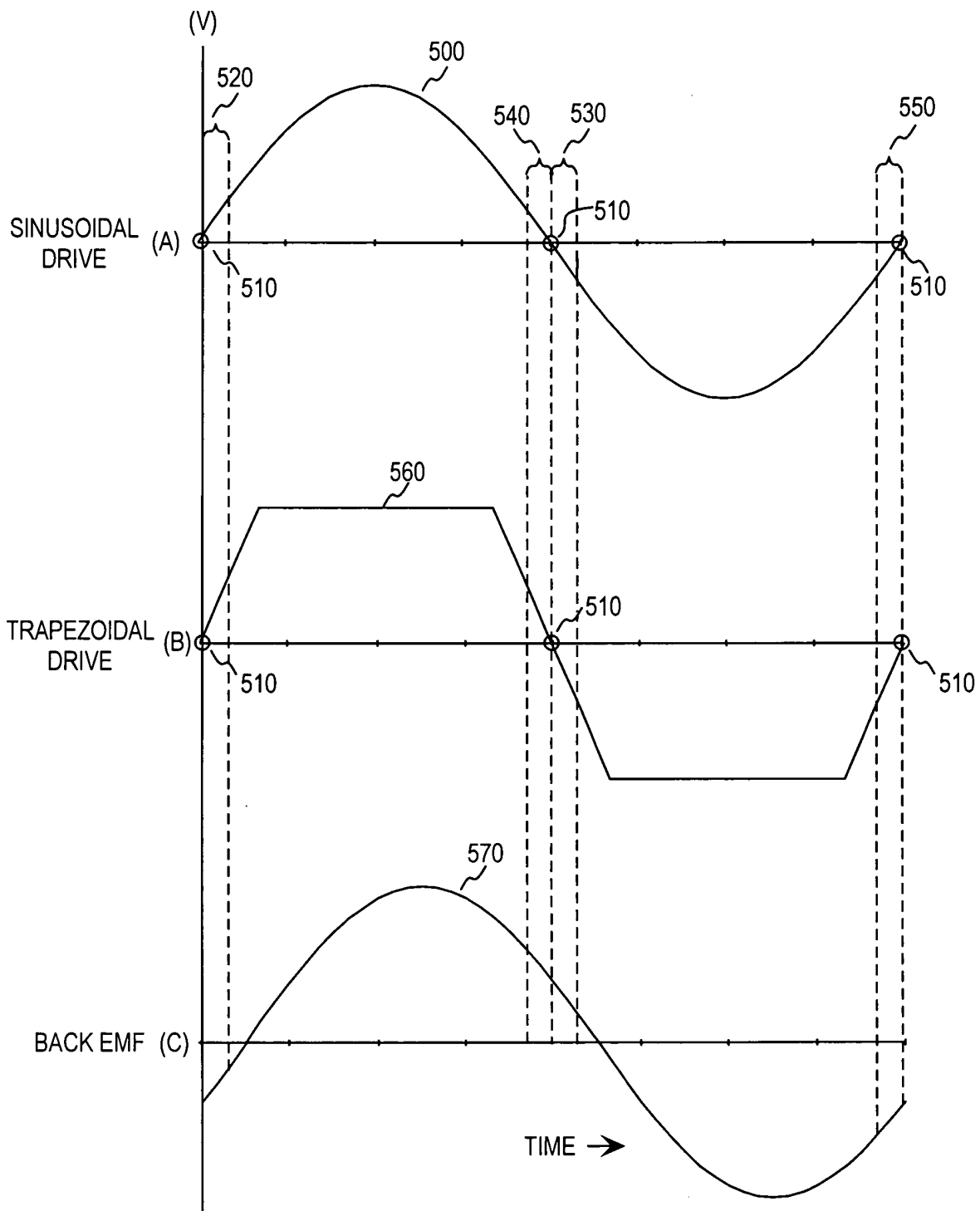


FIG. 5

The block diagram illustrates a speed feedback control system for a brushless DC motor. The system components and their interconnections are as follows:

- 610 PWM INVERTER**: Receives a control signal from the **640 WAVEFORM GENERATOR** and drives the **620 BRUSHLESS DC MOTOR**.
- 620 BRUSHLESS DC MOTOR**: The motor being controlled, which provides mechanical output and feedback signals.
- 630 BEMF DETECTOR**: Receives a signal from the motor and outputs a commutation signal  $\omega_c$  to the **660 PID SPEED CONTROL** and the **650 PID COMMUTATION CONTROL**.
- 670 SPEED DETECTOR**: Receives a feedback signal from the motor and outputs a speed error signal to the **660 PID SPEED CONTROL**.
- 660 PID SPEED CONTROL**: Processes the speed error signal and outputs a control signal to the **640 WAVEFORM GENERATOR**.
- 640 WAVEFORM GENERATOR**: Generates the PWM signal for the inverter based on the speed control signal and the commutation signal  $\omega_c$ .
- 650 PID COMMUTATION CONTROL**: Processes the commutation signal  $\omega_c$  and outputs a signal to the **640 WAVEFORM GENERATOR**.

The commutation signal  $\omega_c$  is derived from the BEMF detector and is used by both the PID speed control and the PID commutation control blocks to coordinate the motor's operation.

FIG. 6

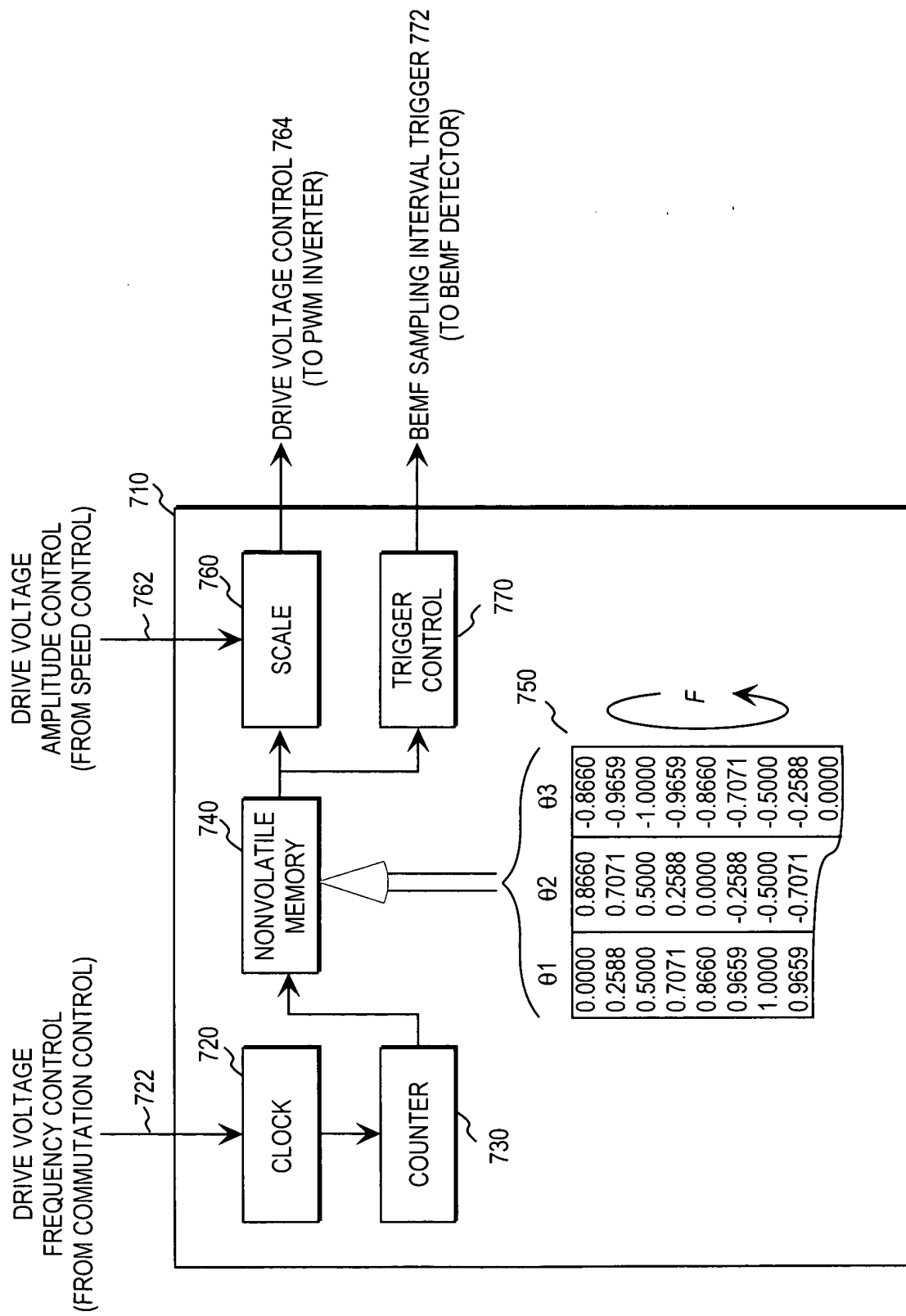


FIG. 7

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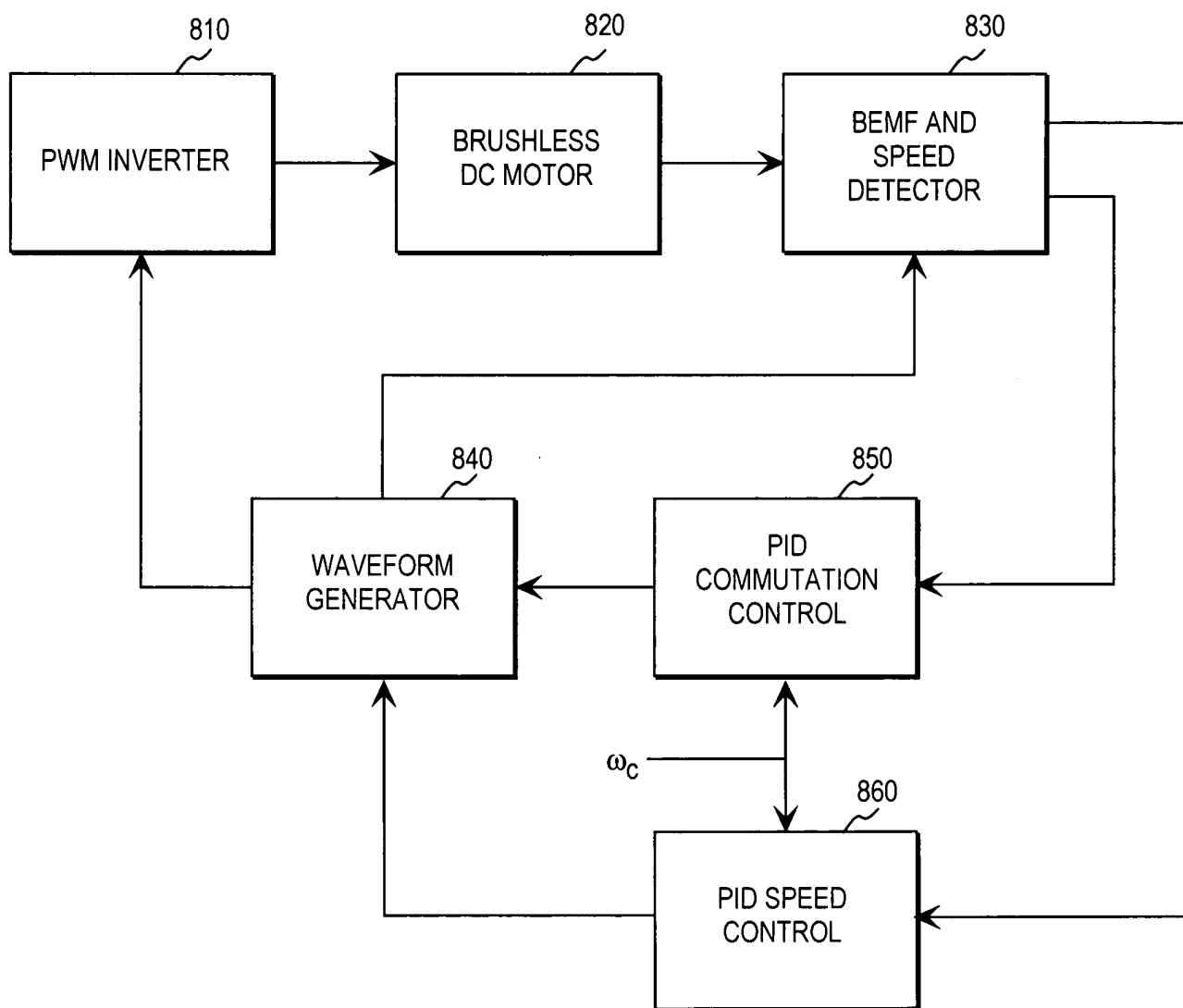


FIG. 8



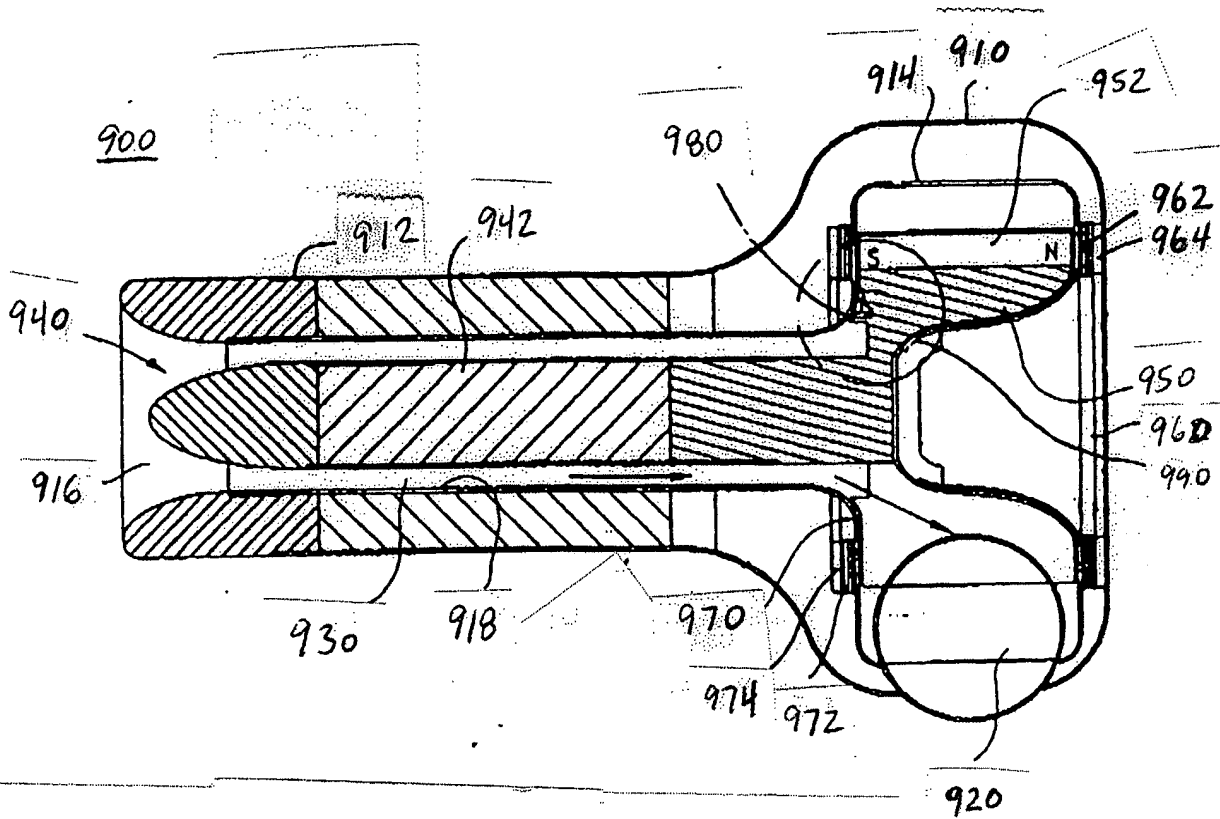


FIG. 9